UTAP Overview

Background

Project Goal

Beneficial Designs received funding in June of 1993 to create a universal mapping system to communicate detailed and pertinent information about individual trails. The information was designed to be useful to anyone who might want to hike a trail, regardless of their hiking ability.

Trail Access Information

Existing trail rating systems using subjective descriptions such as "difficult" do not give users the information they may need to safely attempt a hike. In a 1991 pilot study, Beneficial Designs identified trail characteristics that would allow hikers of all abilities to decide whether to undertake a particular trail and make necessary safety or equipment preparations beforehand. These characteristics include trail grade, cross slope, width, surface firmness, and the presence of obstacles. The dimensions and locations of obstacles such as tree roots, boulders or large rocks, water crossings, ruts, vertical obstructions, steps, dangerous plants, and drop-offs were noted.

Phase I Performing Trail Assessments

In July and August of 1993, Beneficial Designs performed trail assessments in the Gallatin National Forest and Yellowstone National Park with professionals from the National Park Service, the USDA Forest Service, and volunteers from several states. The data collection process resulted in many improvements to the data forms and measuring process. Several design reviews provided valuable input on map layout and information content.

Phase II Training Trail Assessment Coordinators

Beneficial Designs received funding in September 1994 to train and certify trail assessment coordinators to conduct their own trail assessments. Beneficial Designs processed the trail data collected during these assessments into trail access information, including a grade profile and summary of average and extreme grades, cross slopes, and trail widths. The trail assessment process expanded to collect trail maintenance data useful to trail managers.

Trail Access Information
Beneficial Designs has developed many formats to present trail access information to the public. The pocket maps, trailhead signage, audio description tapes, and computerized trail guides are designed to help people with a variety of abilities obtain hiking information. The visual formats use a combination of universal symbols, detailed and general written information, grade illustrations, and overhead route schematics to convey trail access information to visitors. Two-minute audio descriptions, especially useful for people who are visually impaired, can be formatted as audiocassettes or to play at trailhead stations.

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Summary of the UTAP Process

The Five Access Characteristics
During a 1991 pilot study conducted in Yellowstone National Park and the Gallatin National Forest, Beneficial Designs identified five characteristics of a trail that greatly affect access. A system to collect and provide to the public information about grade, cross slope, surface type, obstacles, and trail width was developed into the Universal Assessment Process to help make trail systems more accessible to users.

Grade
The average grade between two designated stations along the trail is measured with a clinometer. These measurements are then used to compute the average grade for the entire trail. Short, steep sections are measured with an inclinometer and recorded as maximum grade sections. The inclinometer is 24 inches in length and thus measures the grade as it would be experienced over the course of a single stride, or by a stroller or wheelchair.

Information about the maximum grade sections found

on a trail is used to add detailed information to maps. The average and maximum grades are displayed with the grade symbol to convey this pertinent information on TAI Strips and trailhead signage.

Objective information about the average and maximum grade is very useful to all user groups, especially mountain bike riders and persons with mobility limitations, including older persons and those that use canes, crutches, walkers or wheelchairs.

Cross Slope
Cross slope is measured at designated stations along the trail with a 24-inch inclinometer. These measurements are then used to compute the average cross slope for the entire trail. Similar to maximum grade, steep cross slope sections are measured with an inclinometer and recorded as maximum cross slope sections.

This information is used to add detailed information to maps. The average and maximum cross slopes are displayed with the cross slope symbol to convey this pertinent information on TAI Strips and trailhead signage.

Cross slope information is most useful to wheelchair users. Wheelchairs are very difficult to drive or maneuver on steep cross slopes.

Width
A tape measure is used to measure the width of the trail. The minimum tread width, or "beaten path," is measured at each station and is used to calculate the average tread width. The minimum amount of usable passage space between stations, or minimum clearance width, is also measured.

Objective information about the width of the trail and the locations of the narrowest sections is critical for people who use mobility devices such as strollers, walkers, and wheelchairs. The average manual wheelchair has a wheelbase width of less than 28 inches. If a trail narrows to 26 inches, persons in a 28-inch wheelchair will know that they will not be able to venture past this point unless they are capable of transferring out of their chair and maneuvering their chair through this narrow location. If the width of the trail is disclosed, mobility device users will be able to determine before embarking on a trail exactly how far

they will be able to hike and whether they will be able to reach their destination.

Surface
The type of surface found in between stations is recorded, as well as a description of its characteristics. Trail surface type is a major influence on the degree of access for all user groups.

Trail Length
The distance from the trailhead is continuously recorded to indicate the total length as well as the position of each measurement site relative to the start of the trail.

UTAP Tools and Materials

Tool Kit
Our Universal Trail Assessment Tool Kit includes a complete array of inexpensive and easy-to-use devices that will enable you to assess your trail accurately while keeping your costs down.

Each kit includes:

- a Suunto compass to determine the trail bearing;
- a Suunto clinometer to measure the average grade between two points of the trail;
- a digital SmartTool inclinometer to measure trail sections for maximum grade and maximum and average cross slope in percent, degrees, or rise:run
- a Rolatape to measure the trail length and the positions of trail features and points of interest.

Also included in the tool kit is a good old-fashioned tape measure to measure tread and clearance widths and the magnitude of obstacles, two clipboards to hold data sheets, preprinted marking flags, a roll of marking tape, a dictaphone and cassettes, a 2-3 person First-aid Kit, master copies of the Trail Data Forms, a permanent marker for writing on flags, and a backpack for carrying essentials. All items fit into a sturdy carrying bag, with plenty of room left for granola bars and rain gear.

The above items can be purchased separately or as a kit. The Minimum Kit includes all of the above items

for one low price, and the Preferred Kit includes a second compass and inclinometer.

For purchasing information, contact paxproducts@beneficialdesigns.com

Click here for a printable version of the UTAP Order Form in Portable Document Format (.pdf) . You will need Adobe Acrobat Reader to view this file. You can download the free Acrobat Reader here.

Trail Assessment Training Manual

The Universal Trail Assessment Coordinator Training Manual teaches you how to asses a trail for access, mapping, and maintenance information. Illustrated step-by-step instructions show how to use each assessment tool, how to accurately measure grade, cross slope , width, and obstacles and how to describe surface type.

The manual includes tips for putting together an effective trail assessment team, checklists for organizing a trail assessment, slope conversion tables (percent:degrees:run/rise), and both the Access Board's and Beneficial Designs' proposed design standards for outdoor recreation access routes and trails.

The Training Manual also teaches you how to correctly complete each line on the Trail Data Form and record trail descriptions. The Training Manual includes examples of obstacles, trail features, points of interest, maintenance issues, and other descriptive information.

Although the Training Manual offers detailed instruction for conducting a Universal Trail Assessment, there's no substitute for hands-on training. We strongly recommend that before you conduct a Universal Trail Assessment, you participate in a Universal Trail Assessment Coordinator Training Workshop.

Benefits of UTAP

The UTAP can be used to:

- provide Trail Access Information to users
- document and monitor trail conditions and the environmental impact of the trail
- identify and prioritize maintenance, access and construction needs
- create detailed logs of signs, bridges and other facilities
- increase user safety and enjoyment by enabling informed trail choices
- gather interpretive information about the trail environment
- enhance trail access and use for a wide variety of users, including older adults, inexperienced users, families and people with disabilities
- track changes in trail conditions over time
- determine trail compliance with design standards
- create trail maps, signs and other information products
- accurately budget for trail maintenance activities
- provide detailed reference information for search-and-rescue plans and activities

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UTAP Trail Assessment Coordinators

UTAP Workshops

For information about upcoming UTAP Trail Assessment Coordinator workshops, contact trails@beneficialdesigns.com

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UTAP Train-the-Trainer Program

Background

Project Goal

This research project addresses the need to increase the availability of training opportunities for land management agencies and trail organizations to learn the Universal Trail Assessment Process (UTAP) through the development of a Train-the-Trainer program.